**Lab Practice (SZZ CSE115)**

**Practice Problems:**

1. **A simple nested for-loop functionality:**

#include <stdio.h>

void main()

{

int i, j;

for(i = 1; i <= 3; i = i + 1)

{

for(j = 1; j <= 4; j = j + 1)

printf("i = %d\tj = %d\n", i, j);

printf("\n");

}

return 0;

}

1. **More into nested for-loops (printing star patterns):**

#include <stdio.h>

void main()

{

int i,j;

for(i = 0; i < 5; i++)

{

for(j = 0; j <= i; j++)

{

printf("\*");

}

printf("\n");

}

return 0;

}

1. **Printing number patterns:**

#include <stdio.h>

void main()

{

int i,j;

for(i = 1; i <= 5; i++)

{

for(j = 5; j >= i; j--)

{

printf("%d", j);

}

printf("\n");

}

return 0;

}

1. **A simple 2-D array functionality:**

#include <stdio.h>

void main()

{

int i, j;

int a[3][3];

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

{

printf("Enter value for array a[%d][%d] = ", i,j);

scanf("%d", &a[i][j]);

printf("\n");

}

}

printf("The values are: \n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

printf("i = %d\tj = %d\ta[%d][%d] = %d\n", i, j, i, j, a[i][j]);

printf("\n");

}

return 0;

}

1. **A simple 2-D array addition:**

#include <stdio.h>

void main()

{

int i, j;

int a[3][3], b[3][3];

printf("Enter values for the first array:\n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

{

printf("Enter value for array a[%d][%d] = ", i,j);

scanf("%d", &a[i][j]);

printf("\n");

}

}

printf("Enter values for the second array:\n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

{

printf("Enter value for array b[%d][%d] = ", i,j);

scanf("%d", &b[i][j]);

printf("\n");

}

}

printf("The values are: \n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

printf("i = %d\tj = %d\ta[%d][%d] = %d\n", i, j, i, j, a[i][j]);

printf("\n");

}

printf("\n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

printf("i = %d\tj = %d\tb[%d][%d] = %d\n", i, j, i, j, b[i][j]);

printf("\n");

}

printf("The addition result for these two arrays are: \n");

for(i = 0; i < 3; i = i + 1)

{

for(j = 0; j < 3; j = j + 1)

printf("i = %d\tj = %d\ta[%d][%d] + b[%d][%d] = %d\n", i, j, i, j, i, j, a[i][j] + b[i][j]);

printf("\n");

}

return 0;

}

**Exercise Problems:**

1. **Print the following star patterns:**

|  |  |  |  |
| --- | --- | --- | --- |
| **\***  **\*\***  **\*\*\***  **\*\*\*\***  **\*\*\*\*\*** | **\* \* \* \* \***  **\* \* \* \***  **\* \* \***  **\* \***  **\*** | **\***  **\*\***  **\*\*\***  **\*\*\*\***  **\*\*\*\*\*** | **\*\*\*\*\***  **\* \***  **\*\*\*\*\***  **\* \***  **\*\*\*\*\*** |

1. **Print the following number patterns:**

|  |  |  |
| --- | --- | --- |
| **1**  **12**  **123**  **1234**  **12345** | **12345**  **1234**  **123**  **12**  **1** | **1**  **12**  **123**  **1234**  **12345** |

1. **Declare a 3 by 3 2-D array and take input from the user. Then display the sum of all the numbers present in the array.**

**Input: Output:**

**|1 2 3| |1 2 3|**

**|4 5 6| + |4 5 6| = 90**

**|7 8 9| |7 8 9|**

1. **Declare 2 3 by 3 2-D arrays and display the result of their subtraction.**

**Input: Output:**

**|1 2 3| |1 2 3| | 0 0 0|**

**|4 5 6| - |4 5 6| = | 0 0 0|**

**|7 8 9| |7 8 9| | 0 0 0|**

**Assignment Problems:**

1. **Declare a 2-D array of any size and take input from the user. Then copy the contents of the array into another 2-D array and print it.**

**For example:**

**2 arrays: a[x][y] , b[x][y] and only a[x][y] will receive user input.**

**Contents of a[x][y] = [1 2 3] Contents of b[x][y] before copying = [0 0 0]**

**[4 5 6] [0 0 0]**

**[7 8 9] [0 0 0]**

**Contents of b[x][y] after copying = [1 2 3]**

**[4 5 6]**

**[7 8 9]**

1. **Declare a 2-D array of any size and take inputs from the user. Then sort the contents of the array into either ascending or descending order.**

**Input: Output:**

**|3 6 9| | 1 2 3| | 9 8 7|**

**|5 8 4| = | 4 5 6| or | 6 5 4|**

**|1 0 2| | 7 8 9| | 3 2 1|**